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|-------------------------------|------------------------|----------------------|--|
| <b>Notice of Allowability</b> | <b>Application No.</b> | <b>Applicant(s)</b>  |  |
|                               | 10/594,185             | SCHLENOFF, JOSEPH B. |  |
|                               | <b>Examiner</b>        | <b>Art Unit</b>      |  |
|                               | Irina Krylova          | 1796                 |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 11/16/09.
2. ☒ The allowed claim(s) is/are 1-13,28-33,36-39 and 42.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |  |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 5. <input type="checkbox"/> Notice of Informal Patent Application  |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>12/08/09</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment  |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                         |
|  | 9. <input type="checkbox"/> Other _____.   |

/Irina Krylova/  
Examiner, Art Unit 1796

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1796

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Paul Fleischut on December 8, 2009.

The application has been amended as follows:

Claim 1 is amended as:

1. (Currently Amended) A polyelectrolyte film comprising a multilayer comprising an interpenetrating network of a net positively charged polyelectrolyte polymer comprising repeat units with at least two fluorine atoms ~~—~~ and a net negatively charged polyelectrolyte polymer comprising repeat units with at least two fluorine atoms, and further comprising a perfluorinated counterion within ~~the bulk the multilayer of the interpenetrating network of the net positively charged polyelectrolyte polymer and the net negatively charged polyelectrolyte polymer~~ , wherein the fluorinated perfluorinated counterion comprises a fluorinated alkanesulfonic acid, a fluorinated alkanecarboxylic acid, or both; an alkane component of the acid having a molecular weight up to 300 g per mole; and at least two four fluorine atoms.

Claim 12 is amended as:

12.A (Currently Amended) A film comprising multilayers of a charged polyelectrolyte polymer comprising repeat units with at least two fluorine atoms and electrostatically complexed with a perfluorinated charged particle comprising repeat units with at least two fluorine atoms, wherein the charge of the polyelectrolyte polymer is opposite that of the charge of the perfluorinated charged particle ; wherein the multilayers comprise layer pairs and each layer pair comprises the polyelectrolyte polymer electrostatically complexed with the perfluorinated charged particle, and the multilayers are created from the polyelectrolyte polymer and an aqueous dispersion or suspension of the fluorinated polymer particles .

Claim 28 is amended as:

28. (Currently amended) The polyelectrolyte film ~~A thin film of claim 1 used for the purpose of~~ wherein the film is adapted for reducing friction at a surface.

The added new claim 42 is as follows:

42. (New) The film of claim 12 wherein the polyelectrolyte polymer comprises a plurality of charged repeat units with at least two fluorine atoms.

**2. The claims are renumbered as follows:**

Claim 1 becomes claim 1.

Claim 2 becomes claim 2, depends on claim 1; reads "The polyelectrolyte film of claim 1"

Claim 5 becomes claim 3, depends on claim 2; reads "The polyelectrolyte film of claim 2"

Claim 6 becomes claim 4, depends on claim 2; reads "The polyelectrolyte film of claim 2"

Claim 3 becomes claim 5, depends on claim 1; reads "The polyelectrolyte film of claim 1"

Claim 4 becomes claim 6, depends on claim 5; reads "The polyelectrolyte film of claim 5"

Claim 7 becomes claim 7, depends on claim 1; reads "The polyelectrolyte film of claim 1"

Claim 8 becomes claim 8, depends on claim 1; reads "The polyelectrolyte film of claim 1"

Claim 9 becomes claim 9, depends on claim 1; reads "The polyelectrolyte film of claim 1"

Claim 10 becomes claim 10, depends on claim 9; reads "The polyelectrolyte film of claim 9"

Claim 11 becomes claim 11, depends on claim 10; reads "The polyelectrolyte film of claim 10"

Claim 28 becomes claim 12, depends on claim 1; reads "The polyelectrolyte film of claim 1";

Claim 29 becomes claim 13, depends on claim 12; reads "The polyelectrolyte film of claim 12";

Claim 30 becomes claim 14, depends on claim 1; reads "The polyelectrolyte film of claim 1";

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Claim 31 becomes claim 15, depends on claim 1; reads “The polyelectrolyte film of claim 1”;

Claim 32 becomes claim 16, depends on claim 1; reads “The polyelectrolyte film of claim 1”;

Claim 33 becomes claim 17, depends on claim 1; reads “The polyelectrolyte film of claim 1”;

Claim 36 becomes claim 18, depends on claim 1; reads “The polyelectrolyte film of claim 1”;

Claim 37 becomes claim 19, depends on claim 1; reads “The polyelectrolyte film of claim 1”;

Claim 38 becomes claim 20, depends on claim 1; reads “The polyelectrolyte film of claim 1”;

Claim 39 becomes claim 21, depends on claim 1; reads “The polyelectrolyte film of claim 1”;

Claim 12 becomes claim 22.

Claim 13 becomes claim 23, depends on claim 22; reads “The film of claim 22”;

Claim 42 becomes claim 24, depends on claim 22; reads “The film of claim 22”.

### ***Reasons for Allowance***

3. The present claims are allowable over the “closest” prior art, namely **Stevenson et al** (US 2004/0191504) and **Wu et al** (US 2003/0169227).

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**4. Stevenson et al** discloses a film having at least one bilayer comprising 1) a polyanion electrolyte layer, and 2) a polycation electrolyte layer, wherein both electrolyte layers are fluorinated (Abstract, [0034]), wherein the layers are self-assembled by electrostatic attraction of the interlayer charges ([0035]). However, **Stevenson et al** fails to further specify a perfluorinated counterion within the multilayer, wherein the perfluorinated counterion comprises a fluorinated alkane sulfonic acid, a fluorinated alkane carboxylic acid, or both, wherein the alkane component of the acid having a molecular weight up to 300 g per mole and at least four fluorine atoms.

**5. Wu et al** discloses an electrophoretic film comprising a multilayer comprising a top layer, a bottom layer and a middle layer, wherein the middle layer is made from a dispersion of a fluorinated electron donating polymer in the continuous phase and a charged particles comprising electron accepting polymer in a dispersed phase (Abstract). However, **Wu et al** fails to teach the multilayers comprising layer pairs, wherein each pair comprises a polyelectrolyte polymer electrostatically complexed with the perfluorinated charged particle, and wherein the multilayers are created from the polyelectrolyte polymer and aqueous dispersion or suspension of the fluorinated polymer particles.

6. Additional pertinent prior art has been uncovered in further search.

**Totsuka** (US 6,562,446) discloses a multi-layer polymer electrolyte membrane comprising perfluorosulfonic acid resin (Nafion) layers. However, **Totsuka** fails to teach

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the multilayer film comprising a positively charged polyelectrolyte in combination with Nafion and further fails to teach the presence of perfluorinated counterion within the multilayer.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina Krylova whose telephone number is (571)270-7349. The examiner can normally be reached on Monday-Friday 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Irina Krylova/  
Examiner, Art Unit 1796

/Vasu Jagannathan/  
Supervisory Patent Examiner, Art Unit 1796